

552529

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
21 October 2004 (21.10.2004)

PCT

(10) International Publication Number
WO 2004/091016 A1

(51) International Patent Classification⁷: **H01M 4/50**

Soon-Ho [KR/KR]; 109-1004, Samsung Hanwool Apartment, Shinsung-dong, Yuseong-gu, Daejeon 305-707 (KR).

(21) International Application Number:
PCT/KR2004/000786

(74) Agent: KIM, Seong-Ki; 14F., Kukdong Building, 60-1, Chungmuro3-ka, Chung-ku, Seoul 100-705 (KR).

(22) International Filing Date: 6 April 2004 (06.04.2004)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AR, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2003-0022429 9 April 2003 (09.04.2003) KR

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

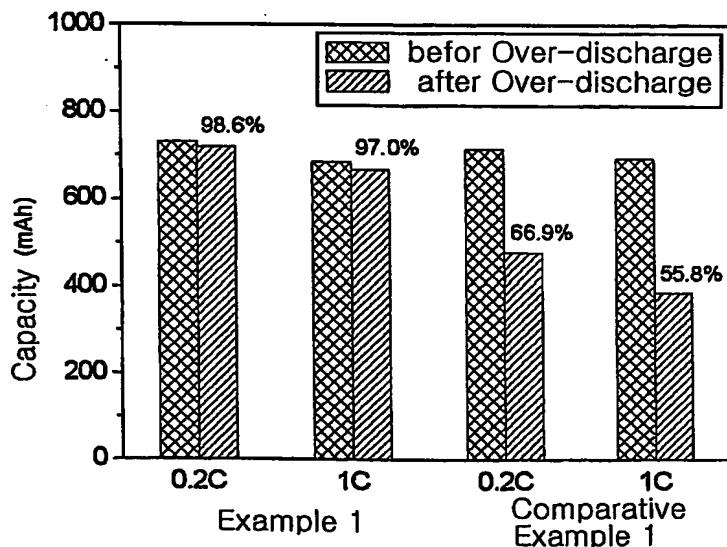
(71) Applicant (for all designated States except US): LG CHEM LTD. [KR/KR]; LG Twin Tower 20, Yoido-dong, Youngdungpo-gu, Seoul 150-721 (KR).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CATHODE ACTIVE MATERIAL COMPRISING ADDITIVE FOR IMPROVING OVERDISCHARGE-PERFORMANCE AND LITHIUM SECONDARY BATTERY USING THE SAME



(57) Abstract: Disclosed is a cathode active material providing a cell performance that is not adversely affected by overdischarge, and a lithium secondary cell using the same. More particularly, the cathode active material for a lithium secondary cell comprises a lithium-transition metal oxide capable of lithium ion intercalation/deintercalation, wherein the cathode active material further comprises a lithium manganese oxide having a layered structure represented by the following formula 1 as an additive:[formula 1] $\text{LiM}_x\text{Mn}_{1-x}$ where x is a number satisfying $0.05 < x < 0.5$, and M is at least one metal selected from the group consisting of Cr, Al, Ni, Mn and Co. The lithium manganese oxide of formula 1 used as an additive for a cathode active material of a lithium secondary cell provides lithium ions in such an amount as to compensate for an irreversible lithium ion-consuming reaction at an anode, or more, thereby providing a lithium secondary cell which is low in capacity loss by over-discharge.

WO 2004/091016 A1